Upper airway obstruction due to bilateral laryngeal polyp: A challenge of treatment in rural area

Hamsu Kadriyan[1], Elya Endriani[2], Fahrin Ramadhan Andiwijaya[3], Ida Lestari Harahap[3]

Abstract

A laryngeal polyp is a common benign lesion of phonotraumatic origins. However, a case of the laryngeal polyp with the upper airway obstruction is rare. The common symptoms include hoarseness or reduced vocal quality, and dyspnea could be present in severe cases. Depending on the anatomical location of the polyp, manipulation on the larynx could cause laryngospasm and life-threatening airway obstruction. In this case, the patient underwent a planned cesarean section under general anesthesia. However, her breathing rhythm did not return spontaneously after surgery and she was sent to the intensive care unit. Bilateral laryngeal polyps were discovered after the removal of an endotracheal tube. However, there was a delay in the removal of the polyps, where it was performed two months after the intensive care unit discharge. The histopathological results confirmed a diagnosis of bilateral angiomatous laryngeal polyps.

Key words: Laryngeal polyp, histopathology, airway obstruction, rural area.

Introduction

A laryngeal polyp is a common benign lesion found in the larynx, with a unilateral lesion being more prevalent compared to a bilateral lesion. (1) The main symptom of a laryngeal polyp is hoarseness or reduced vocal quality, and in severe cases, dyspnea can be present. The presentation of symptoms depends on the anatomical location and the size of the polyp, where most polyps arise from the vocal fold mucosa. Polyps are more common in the form of a pedunculated lesion that can occur along the membranous part of the vocal cord, however, predominantly at the anterior third. The cause of a laryngeal polyp is of phonotraumatic origins, such as acute or chronic abuse to the cord. Other causes include gastroesophageal reflux, smoking, aggressive chemical aspiration, or intense respiratory activity. (2) If the polyp is located underside of the true vocal cord, the hanging lesion will follow the respiratory rhythm. This condition tends to cause laryngospasm and life-threatening airway obstruction if there is sudden manipulation to the inlet. (3,4) Therefore, a thorough examination of the airway should be performed prior to any airway management procedures.

In a rural setting, specialist equipment and physicians are limited. (5) Furthermore, the management of many cases should be performed within those limitations, including unpredictable life-threatening patients such as bilateral laryngeal polyp with the obstruction of the upper airway.

This case aims to illustrate the risk of airway obstruction after the general anesthesia on patient with laryngeal polyp.

[1] Department of ENT-HNS RSUD Provinsi NTB/Faculty of Medicine, Universitas Mataram, West Nusa Tenggara, Indonesia
[2] Department of Anesthesiology and Reanimation RSUD Provinsi NTB/Faculty of Medicine, Universitas Mataram, West Nusa Tenggara, Indonesia
[3] Department of Biomedical, Faculty of Medicine, Universitas Mataram, West Nusa Tenggara, Indonesia

Address for correspondence:
Hamsu Kadriyan, MD, PhD
Department of ENT-HNS RSUD Provinsi NTB/Faculty of Medicine, Universitas Mataram
Jl. Pendidikan No. 37, Mataram, West Nusa Tenggara, Indonesia
Tel: +62370638114
Email: hamsu@unram.ac.id

Case report

A 30-year-old patient came to the hospital to undergo a planned cesarean section under general anesthesia; this was planned due to the risk of her gestational obesity and pre-eclampsia. The patient had no history of dyspnoea and hoarseness; however, she complained about frequent episodes of shortness of breath. She also had a mild allergic rhinitis history. Bodyweight and height of this patient were 130 kg and 164 cm, respectively. General physical examination was done by the anesthesiologist, including electrocardiogram and laboratory testing, which were all within normal limits. During the placement of the endotracheal tube, the tube could be inserted easily. During surgery, there were no issues concerning airway management. However, after surgery, the respiration did not return spontaneously. Initial airway and respiratory treatment were given, and the patient was sent to the intensive care unit.

On the fourth day, the endotracheal tube was removed, then sent to a higher facility for otolaryngologic consultation. Endoscopic examination showed large bilateral laryngeal polyps. The otolaryngologist suggested the patient undergo surgical removal of the laryngeal polyps; however, surgery was postponed due to the patient's request.

Two months after the discharge from the intensive care unit, the patient presented with a reduction of voice quality and shortness of breath. The patient denied any history of vocal abuse, such as shouting, smoking, and episodes of gastric reflux.

Endoscopic workup was done, showing the previous finding of bilateral polyps (**Figure 1**). The patient underwent endoscopic surgery to remove the laryngeal polyps. Followed by a histopathology examination (**Figures 2 and 3**) that shows a stratified epithelium, stroma with small vessel proliferation containing erythrocytes, lymphocytes, histiocytes, and polymorphonuclear inflammation cells. Based on the histopathology description, this case was diagnosed as an angiomatous polyp.

Differential diagnosis in the event of a laryngeal mass, includes laryngeal polyps, malignancy, and granulomas. Due to the symptoms that were present, we treated this case regarding a laryngeal polyp. However, in this case, the patient had a history of prolonged intubation, thus there is a possibility of making intubation granuloma as the diagnosis. Ultimately, histopathological examination as the golden standard should confirm the final diagnosis.

Surgery was performed to remove the bilateral laryngeal polyp, followed by vocal rest. The patient was discharged the day after surgery. The result of treatment presenting better voice quality. The patient was then followed up 2 weeks after surgery with complete resolution of voice quality, and endoscopic examination follow-up revealed no polyps anymore.

Discussion

The main clinical presentation of a laryngeal polyp is the deterioration of vocal quality; this is mainly due to acute or chronic irritation of the vocal folds. Irritation or vocal abuse can be of phonotraumatic origin, aggressive chemicals, or gastric reflux. (1) However, in this case, alarming the presence of a mass in the laryngeal area was the non-spontaneous return of breathing after general anesthesia and extubating. Therefore, the first endoscopic workup for this case was to find the cause of the non-spontaneous return of the normal breathing pattern. At the higher otolaryngology facility, endoscopic workup showed a bilateral pedunculated mass at the posterior part of the true vocal folds. Moreover, it has been reported that a pedunculated laryngeal polyp can cause sudden airway obstruction as a result of a sudden manipulation of the airway inlet. (3,4)

Our patient developed symptoms of deterring voice quality and hoarseness two months after the first endoscopic examination. Moreover, our patient presented symptoms that mimic an intubation granuloma, where voice quality reduction occurred after the insertion of an endotracheal tube for four days. Physically, both laryngeal polyps and granulomata appear similar, and both can be unilateral or bilateral. Granuloma predominantly develops in the posterior region of the larynx, and laryngeal polyps commonly origin at the anterior region. (4) Ido Filho et al. (2013) reported 20 of 93 (21.5%) laryngeal polyp occurs in the posterior part of the larynx. (6) On the other hand, the occurrence rate of a laryngeal granuloma ranges from 0.01% to 3.5%, where women are more susceptible to develop granulomas, as to patients with obesity or having shorter neck anatomy. (3,7)

The gold standard to diagnose a laryngeal polyp is by histopathological examination, where signs of vascular proliferation should appear as well as telangiectasias and other inflammation signs. Specimen from this patient showed small vessel proliferation containing erythrocytes, lymphocytes, histiocytes, and polymorphonuclear inflammation cells. In contrast, a granuloma lacks the presence of aggregates of mononuclear and multinucleated histiocytes, rather showing a process of reaction or reparation, with the presence of granulation tissue or fibrosis. (8,9) The pathologist confirmed an angiomatous polyp as the diagnosis.

Treatment of a laryngeal polyp ranges from laryn-

geal microsurgery to other treatments such as conservative treatment, endoscopic laser, steroid injection, and vocal health orientation with the prevention of gastric reflux, where all of which shows positive results. The treatment of granuloma circles on conservative voice therapy and prevention of underlying cause of irritation. (1,9) This patient underwent endoscopic surgery and showed a return of voice quality. The broad definition of the etiology of a laryngeal polyp could lead to a suggestion of another diagnosis with similar etiology such as the intubation granuloma where both present similar clinical symptoms. Conditions such as gender and other physical examination were taken into consideration in making the final diagnosis. Histopathological examination confirmed the presence of inflammatory substances; therefore, the final diagnosis is confirmed to be a bilateral laryngeal polyp.

In rural settings such as Lombok, Indonesia, several challenges on the management of certain diseases are due to the limitation of advanced equipment. (5) In our case, video-assisted or endoscopic guidance for intubation was not available. This equipment may use before airway management in elective surgery to prevent unwanted airway emergencies. The other challenge in the treatment of certain diseases in a rural area is the delay time in seeking treatment. (10) Our patient took two months to finally undergo surgery, where, due to several reasons the patient delayed further management of the condition. Only after the deterioration of the symptoms was felt that the patient decided to undergo surgery. Ideally, the polyp should be removed just after being diagnosed because of the possibility of airway obstruction, which could lead to fatal consequences.

As it is of paramount importance to thoroughly examine the airway prior to performing airway management, based on this case the authors propose an awareness scoring system to prevent the difficulty of recovering spontaneous breathing in laryngeal polyp patients who were not previously known. 1) History of difficulty in breathing (episodes of shortness of breath), 2) History of impaired voice quality (deterioration of vocal quality), and 3) Overweight or obese (BMI index). Each point is given a value of 1, and if there are at least 2 points, it is advisable to conduct an endoscopic evaluation of the laryngeal condition prior to the intubation. This proposed awareness scoring system could aid physicians in rural settings where limited endoscopic facilities are available.

Conclusion

Aggravating symptoms of a laryngeal polyp include life-threatening airway obstruction, and this could result from sudden mechanical manipulation of the airway. It is of paramount importance to thoroughly examine the airway prior to performing airway management such as intubation, especially in elective surgeries. In a rural area, clinical scoring is very useful to predict the risk of upper airway obstruction, including due to a large bilateral laryngeal polyp.

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Consent

Written and verbal consent was obtained from the patient for this case report.

Conflict of interest

The authors declare that they have no conflicts of interest.

Figure 1. Endoscopic view found a bilateral laryngeal polyp (blue arrows) on posterior part of vocal cord

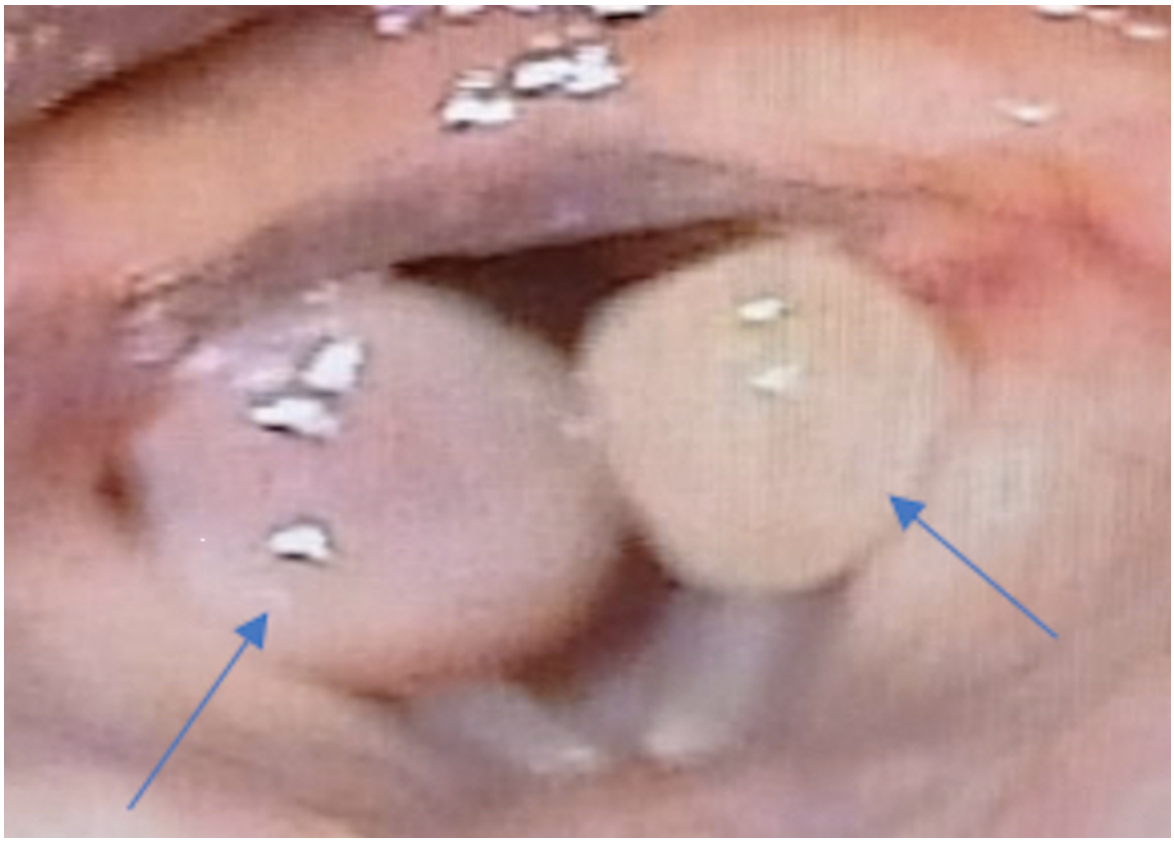


Figure 2. Histopathologic (40x) finding showed a stratified epithelium (brown arrow) and stroma (blue arrow) with small vessel proliferation containing erythrocytes, lymphocytes, histiocytes, and polymorphonuclear inflammation cells

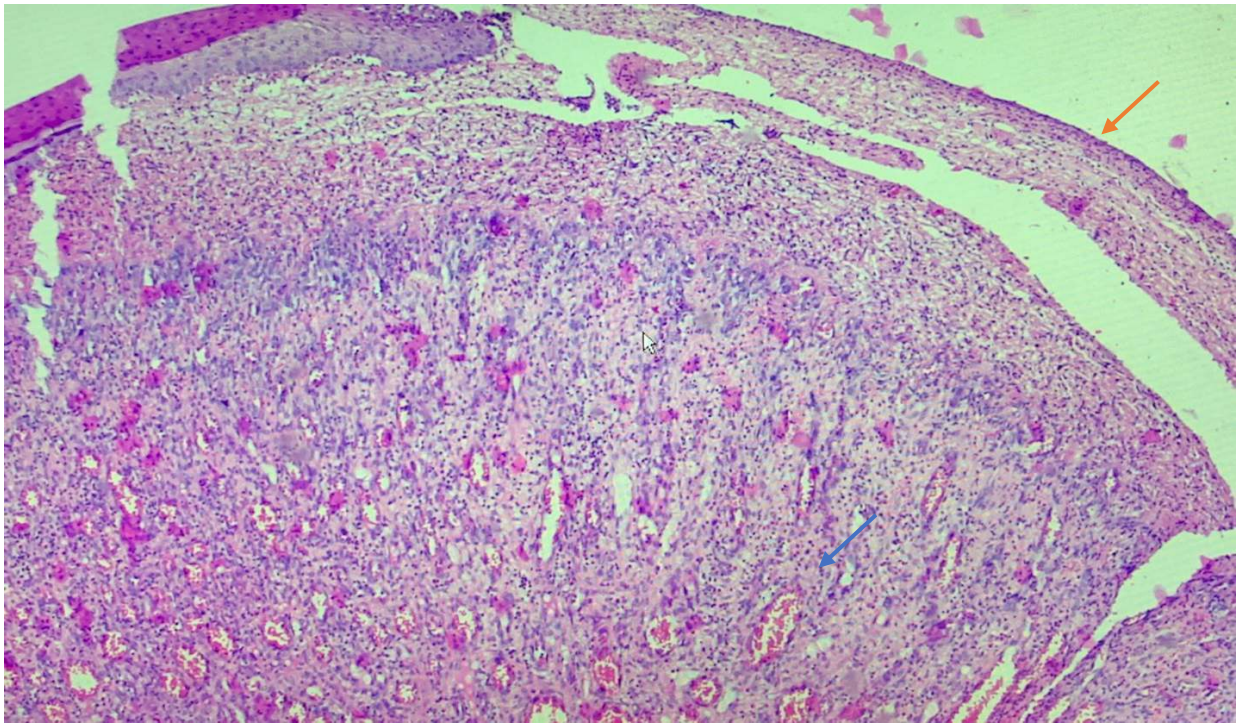
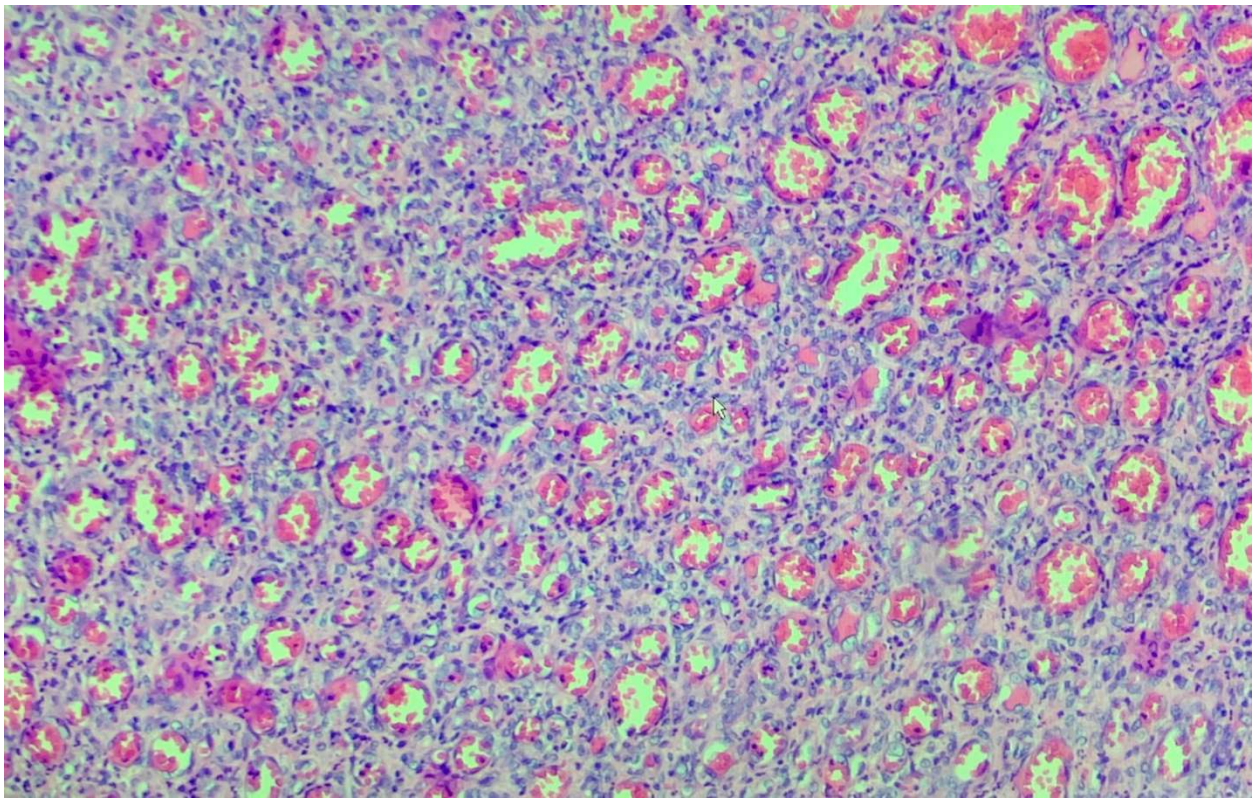


Figure 3. Histopathologic (100x) finding shows a stroma with small vessel proliferation containing erythrocytes, lymphocytes, histiocytes, and polymorphonuclear cells



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